

and/or pneumonia in 10 cases, thrombo-embolism in 5 cases. Twenty-one patients died of multi-organ failure (11 cases), multi-organ failure with sepsis (3 cases) and cerebral complications (5 cases). There was an observed difference between the survivors bridged to recovery or transplantation depending on age, etiology of cardiac failure, and length of ventricular support (table 1).

**Conclusions:** Berlin Heart-Excor is an effective ventricular assist device for patients with refractory acute heart failure. It can be successfully used as short and long term support until myocardial recovery or heart transplantation. Bridge to recovery is rare after myocardial infarction secondary cardiogenic shock. For these patients, Berlin Heart-Excor seems to be a favourable assist device for bridging the patients to heart transplantation.

**Table 1. Demographic parameters of the patients and subgroup analysis.**

	Age (years)	Sex (F/M)	Etiology Post-MI Post-CPB Post-Tx Post-myocarditis Post-ethyilsme	Duration of support (days)	Length of support < 30 days > 31 days	Type BVAD LVAD RAVD
All patients (n=33)	47±18 (5-75)	6/27	17 6 2 7 1	43 ± 131 (0-754)	27 6	18 13 2
Bridge to recovery and tx* (n=11)	38 ± 20 (5-59)	2/10	5 1 2 3 1	102 ± 212 (3-754)	6 5	6 5 1
Recovery (n=6)	29 ± 21 (5-59)	2/4	- 1 2 3 -	16 ± 16 (3-52)	5 1	2 2 1
Tx (n=5)	52 ± 5 (47-58) years	-/6	5 - - - 1	222 ± 302 (17-754)	1 4	3 3 -
Discharged (n=21)	51 ± 15 (14-75)	4/17	12 5 - 4 -	10 ± 25 (0-120)	20 1	12 8 1

**Proximal reoperations after ascending aortic repair for acute type A dissection**

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**Background:** This study is focused on patients who required late reoperations due to continuous aortic root dilatation with proximal anastomosis disruption after primary emergent ascending aortic repair for acute type-A dissection.

**Methods:** Between 1/2005 and 10/2009, 297 patients underwent continued radiographic surveillance of ascending aortic repaired type-A aortic dissection in two different institutions. During follow-up a total of 39 patients were reoperated; 13 patients (4.4%) required aortic root replacement. We revised these patients retrospectively with regard to causes of reoperation, early and late mortality.

**Results:** All patients were reoperated due to proximal anastomotic disruption or re-dissection of the non-coronary sinus. Mean aortic root diameter increase was 21.3 mm(range: 10–44) and mean time from initial repair to reoperation was 69.9 months(range: 12–180). Thirty-day mortality was 23% (3/13). Incidence of renal failure and bleeding was 38%(5/13) and 23%(3/13). Median follow-up was 48 months and 1-, 3- and 5-year survival was 77%, 70% and 61%, respectively.

**Conclusions:** In this series, few patients required a proximal reoperation after ascending aortic repair for acute type-A dissection. However perioperative mortality and morbidity was substantial. A larger prospective analysis is warranted to elucidate whether repair has to be extended to the non-coronary sinus and to identify predictors for late aortic root enlargement.

**Pulsing the Levitronix CentriMag® for accurate control of heart-device interaction**

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**Introduction:** Short-term and long-term mechanical support of the failing heart is mostly performed with so-called continuous flow devices or Rotary Blood Pumps (RBP). They are small, quiet, and simple but have only one control parameter (speed) and hold the risk of ventricular suckdown or overpumping. Consequently, the unloading of the left ventricle (LV) can only be managed in a limited range. Gradual reloading of the assisted heart is suggested as a method to promote myocardial strengthening and may lead to recovery of a failing heart, however this requires accurate control over myocardial load. We hypothesize that pulsing the pump speed and controlling its timing with respect to native cardiac function can accurately control myocardial (un)loading with a RBP.

**Methods:** Adult goats (n = 8, 58–69 kg) were implanted with a CentriMag™ RBP (Levitronix) via left thoracotomy with short apical-aortic cannulation similar to implantable devices. Besides anesthesia monitoring, the animals were instrumented with aortic and coronary flow probes (Transonic), catheters for oxygen content measurement in the carotid artery and coronary sinus, and a Pressure-Volume catheter (Scisense) in the LV. A custom pump controller and LabView software were used to run the device in a pulsatile (sinusoidal) mode, both asynchronous and in synchrony with the ECG. Various combinations of mean speed and amplitude were assessed and the synchronization was performed in co- and counterpulsation.

**Results:** Asynchronous pulsing of the RBP caused cyclic changes in arterial hemodynamics that are visible in arterial pressure and flow waveforms and LV pressure-volume loops. The larger the difference between heart rate and pump pulse rate, the higher the frequency of the cycle. ECG-synchronized pulsing caused stable hemodynamics that can be controlled with the triggering of the pump pulse. A change of triggering resulted in immediate effects on arterial pressure and flow, LV pressure-volume loops, and myocardial oxygen consumption. Stroke Work can be controlled between 77% and 120% of the value at steady speed, thereby decreasing or increasing the load on the heart.

**Conclusions:** Asynchronous pulsing of a RBP yields continuously varying myocardial load, while synchronized pulsing offers an extra control modality of hemodynamics. The sensitivity of timing of the pump pulses makes this technique suitable for gradually reloading the mechanically supported heart and stimulating myocardial recovery.

**Impact of long-term complications on quality of life after atrial switch procedure**

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**Background:** GUCH-patients after atrial switch operation represent a challenging population, not least in regard to treatment options for long-term complications (arrhythmias, RV-dysfunction, reinterventions), but also to preservation of quality of life (QoL).

**Patients and methods:** Systemic RV-fenestration, tricuspid valve regurgitation, and exercise capacity of Senning/Mustard-patients were calculated using echocardiography, MRI, CPET. Their NYHA-class, occurrence of arrhythmias and rate of reintervention were assessed. QoL of 64 GUCH-patients after Senning/Mustard was assessed by SF-36 and an additional specific questionnaire, and was compared to 111 other GUCH-patients (ASO,VSD,TOF). Correlation between QoL and morphological/functional parameters, as well as potential negative impact factors were analysed.

**Results:** RV-dysfunction, tricuspid valve regurgitation, impaired exercise capacity were revealed in the majority of the patients, despite 95% of them were still in NYHA I-II, after a mean follow-up of 26.3 ± 6.5 y. QoL of 64 Senning/Mustard-patients (mean age: 28.6 ± 7.5 y) appears to be normal (109.1 ± 22.3), but significantly

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